REMARKS

Claims 1-17, 21 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen (U.S. Patent Number 5,751,725) in view of Jacobs et al. (U.S. Patent Number 5,414,796, hereinafter "Jacobs"). The Examiner's thoughtful and thorough reply in the *Response to Arguments* section of the present office action is appreciated; however, the applicants respectfully disagree with the Examiner's rejections and request reconsideration. Nonetheless, claims 1-7 and 15-17 have been canceled without prejudice or disclaimer, and claims 9, 10, 13, 14 and 21 have been amended to clarify their meaning to the reader.

As asserted in their pervious response, the applicants submit that neither Chen nor Jacobs teach or suggest modifying a filter state based on the validity of the frame rate determination. In order to make this more clear from the claims, the applicants have amended the claims to more explicitly express this filter state modification. As amended, independent claim 9 recites (emphasis added) "decoding the first frame according to the first frame rate **to produce a speech decoder filter state**;...determining, based on the second frame rate, if the first frame rate was in error to produce an error determination; **updating the speech decoder filter state** based on the error determination to produce an updated speech decoder filter state; **decoding the second frame using the updated speech decoder filter state.**" Thus, to paraphrase, the speech decoder filter state results from decoding the first frame and is updated based on the frame rate error determination before being used to decode the second frame.

The Examiner asserts that Jacobs teaches making correction to the characteristics of decoder's filters when defective, erased or blank frames are detected, citing Jacobs column 41, lines 20-23 and FIG. 21c. Jacobs column 40, line 53 – column 41, line 24 reads (emphasis added):

> **In the event that a frame is lost due to a channel error**, the vocoder attempts to mask this error by **maintaining a fraction of the previous frame's energy and smoothly transitioning to background noise. In this case the pitch gain is set to zero**; a random codebook is selected by using the previous subframe's codebook index plus 89; the codebook gain is 0.7 times the previous subframe's codebook gain. It should be noted that there is nothing magic about the number 89, this is just a convenient way of

> selecting a pseudorandom codebook vector. The previous frame's LSP frequencies are forced to decay toward their bias values as...
> The LSP frequency bias values are shown in Table 5. The parameters received and corresponding subframe information is listed in FIG. 21b.
> **If the rate cannot be determined** at the receiver, the packet is discarded and an erasure is declared. However, if the receiver **determines there is a strong likelihood the frame was transmitted at full rate,** though with errors the following is done. As discussed previously at full rate, the most perceptually sensitive bits of the compressed voice packet data are protected by an internal CRC. At the decoding end, the syndrome is calculated as the remainder from dividing the received vector by g(x), from equation (46). If the syndrome indicates no error, the packet is accepted regardless of the state of the overall parity bit. If the syndrome indicates a single error, the error is corrected if the state of the overall parity bit does not check. If the syndrome indicates more than one error, the packet is discarded. If an uncorrectable error occurs in this block, the packet is discarded and an erasure is declared. Otherwise the **pitch gain is set to zero** but the **rest of the parameters** are used as received with corrections, as illustrated in FIG. 21c.

However, the applicants submit that Jacobs instead teaches zeroing-out received encoded parameters (e.g., the pitch gain) of the received erroneous frame before using that frame in the decode process. Moreover, FIG. 21c depicts two columns, labeled "RECEIVED PARAMETERS FOR AIR FRAME" and "DECODE SUBFRAME PARAMETERS USED". FIG. 21c clearly refers to frame parameters, not filter **states.**

In the *Response to Arguments* section of the present office action, the examiner asserts that the pitch gain is a synthesis filter parameter, citing Jacobs column 11, lines 54-57, which reads (emphasis added):

> In the codebook search, blocks 104 and 106, the optimum pitch lag L and pitch gain b values are **used in the pitch synthesis filter** such that for each possible codebook index I the synthesized speech is compared with the original speech.

Clearly, pitch gain is a value used in the pitch synthesis filter. However, the applicants submit that the pitch gain is not a speech decoder **filter state,** as claimed. Again, the applicants assert that the speech decoder filter **state** results from decoding the first frame (i.e., it is a filter state, not a received air frame parameter) and is updated based on the frame rate error determination before being **used to decode the second frame.** The applicants do not see that Jacobs teaches or suggests such a filter state update.

Regarding claim 10, the Examiner cites Chen (Col 11, line 27-30). From Col 11, lines 15-25, Chen is taking advantage of the statistical nature of speech whereby if someone is speaking the next frame is also more likely to be speech (i.e., full rate). If they are silent, the next frame is more likely to be silent (i.e., 1/8th rate). Chen uses this to adjust SER thresholds. Taking advantage of statistics cannot be used to accurately

determine a mis-determined frame rate. Moreover, as amended, claim 10 recites (emphasis added) "determining if a transition from the first frame rate to the second frame rate was **invalid for not conforming to pre-defined, vocoder, rate-transition rules,**" not just unlikely.

Regarding claim 13, the applicants submit that it is not obvious to reset filter states on detection of a "bad" frame. In speech coding, known erasure mitigation techniques involve extrapulation and processing filters **using the previous state.** Again, Jacobs is detecting current bad frames and trying to minimize disruption to the filter state when processing the current frame by modifying the current frame before processing. In contrast, our disclosure involves detecting that a previous frame was handled incorrectly. Therefore, in our disclosure we determine that the filter state prior to the processing of the current frame is corrupted and thus reset it.

Since none of the references cited, either independently or in combination, teach all of the limitations of base claim 9, or therefore, all the limitations of their respective dependent claims, the applicants assert that neither anticipation nor a prima facie case for obviousness has been shown. No remaining grounds for rejection or objection being given, the applicant now respectfully submits that the claims in their present form are patentable over the prior art of record, and are in condition for allowance. As a result, allowance and issuance of this case is earnestly solicited.

The Examiner is invited to contact the undersigned, if such communication would advance the prosecution of the present application. Lastly, please charge any additional fees (including extension of time fees) or credit overpayment to Deposit Account No. **502117 -- Motorola, Inc.**

Respectfully submitted,
L. Proctor et al.

By: Jeffrey K. Jacobs

Jeffrey K. Jacobs
Attorney for Applicant(s)
Registration No. 44,798
Phone No.: 847/576-5562
Fax No.: 847/576-3750